



HYPERTHYROIDISM

Longer duration of hyperthyroidism is associated with increased risk of dementia

BACKGROUND

Dementia, a decrease in memory and other brain functions, is common in older adults and can lead to difficulty in performing daily activities. Due to the worldwide growth of the older adult population, there is a significant projected increase in the number of dementia cases. Despite widespread research to understand risk factors for dementia, there is currently no cure. Because of this, recent studies have focused on understanding whether risk factors that can be treated, such as thyroid function changes, affect the risk of developing dementia. The objective of this study was to assess the risk of dementia in patients with hyperthyroidism and understand whether duration of hyperthyroidism plays a role.

THE FULL ARTICLE TITLES

Folkestad L et al Graves' disease and toxic nodular goiter, aggravated by duration of hyperthyroidism, are associated with Alzheimer's and vascular dementia: A registry-based long-term follow-up of two large cohorts. *Thyroid* 2020; May;30(5):672-680.

SUMMARY OF THE STUDIES

This study used data from two large registries in Europe, the Danish National Patient Registry (DNPR) and the OPENTHYRO. The DNPR includes all adult patients in Denmark with hyperthyroidism either due to Graves' disease or toxic nodular goiter since 1977. The OPENTHYRO registry consists of all individuals who had at least one thyroid stimulating hormone (TSH) measurement performed at the Odense University Hospital in Denmark between 1995 and 2012. Diagnosis of dementia was determined based on billing codes and diagnosis of hyperthyroidism was determined based on billing codes (DNPR) and laboratory data (OPENTHYRO). The authors compared events of dementia in hyperthyroid patients (both overt and subclinical) to patients with normal thyroid function, taking into account ongoing chronic conditions. Patients who had a diagnosis of dementia or were prescribed a

medication as treatment of dementia prior to the first TSH measurement were excluded.

The final study population from DNPR included 55,656 hyperthyroid individuals and 220,561 individuals with normal thyroid function. Patients were followed for an average of 7.9 years. Overall, a total of 2,217 (4.9%) of individuals were diagnosed with dementia compared with 7,907 (3.6%) in the individuals with normal thyroid function. The risk of dementia was significant even when adjusting for other medical problems. Both causes of hyperthyroidism (Graves' disease vs toxic nodular goiter) were associated with an increased risk of dementia.

In the OPENTHYRO study sample, 2,688 hyperthyroid individuals were identified and matched with 10,752 individuals from the euthyroid reference population. Average follow-up was 8.7 years. Overall, 190 (7.1%) of hyperthyroid individuals had dementia, compared to 473 (4.4%) in individuals with normal thyroid function. Additionally, there was a 4.4-fold increased risk of dementia over 5 years of decreased TSH compared to those with normal TSH.

WHAT ARE THE IMPLICATIONS OF THESE STUDIES?

This study suggests that there is a significantly higher risk by ~20% of dementia in hyperthyroid patients compared to individuals with normal thyroid function, with duration of hyperthyroidism further adding to that risk. These findings have important public health implications as hyperthyroidism may be a potential risk factor for the development of dementia that can be treated. It is therefore important for physicians to closely follow patients with consistently low TSH levels, as early recognition and treatment of hyperthyroidism may play a role in decreasing the risk for a decrease in brain. However, larger studies are needed to conclusively determine the effects of hyperthyroidism treatment on dementia risk.

— Maria Papaleontiou, MD





HYPERTHYROIDISM, continued

ATA THYROID BROCHURE LINKS

Hyperthyroidism (Overactive): <https://www.thyroid.org/hyperthyroidism/>

Graves' Disease: <https://www.thyroid.org/graves-disease/>

ABBREVIATIONS & DEFINITIONS

Dementia: a general term for loss of memory, language, problem-solving and other thinking abilities that are severe enough to interfere with daily life. Alzheimer's is the most common cause of dementia.

Hyperthyroidism: a condition where the thyroid gland is overactive and produces too much thyroid hormone. Hyperthyroidism may be treated with antithyroid meds (Methimazole, Propylthiouracil), radioactive iodine or surgery.

Subclinical Hyperthyroidism: a mild form of hyperthyroidism where the only abnormal hormone level is a decreased TSH.

Graves' disease: the most common cause of hyperthyroidism in the United States. It is caused by antibodies that attack the thyroid and turn it on.

Toxic nodular goiter: characterized by one or more nodules or lumps in the thyroid that may gradually grow and increase their activity so that the total output of thyroid hormone in the blood is greater than normal.

TSH: thyroid stimulating hormone — produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally.

